

# COST *and* MANAGEMENT

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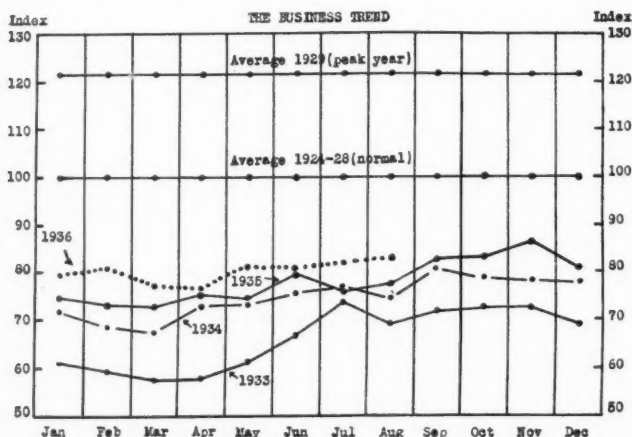
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## 1936 Maintains Recovery

CANADIAN business in 1936 is keeping steadily above its 1935 level which, as is well known, was the best of the recovery years up to that time. The accompanying chart gives the comparison in clear form. Although April and June recorded only slight margins over last year, the gains in other months, including July and August, have been wide enough to be quite satisfactory.

1934, which was the first full recovery year, was a decided improvement over 1933, especially in the earlier months. 1935 was inclined to lag until the autumn. In the current year, there were signs of weakness in March and April, but the summer brought renewed advances, in contrast to declines in some other years. The autumn will have to be unusually good, to maintain a safe margin over late 1935.

If the 1924-28 average can be regarded as a fair normal, we have still some distance to go to get back to that level. And of course we are still far behind the boom level of 1929.



Several records or indexes have recently been quoted in the press as above normal, and a few even at new high levels. The one used here, accordingly, may be regarded as conservative. A brief reference to the items included in it will however show that it is fair, and will also indicate the trend in some specific phases of business.

One figure is total bank clearings or debits. These, since they reflect the total money turnover, are obviously in themselves an im-

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portant guide to business activity. In recent months they have run from 80 per cent to over 100 per cent of the long term average or normal.

Employment figures, as compiled by the Dominion Bureau of Statistics, appear the most favorable of all those included, recent months being over the 100 mark. But there are more people in the country than ever before, and though the number employed may be more than as the case ten years ago, there are still close to 2,000,000 people, or 20 per cent of the total population, dependent in some degree upon relief or upon public works which in reality are relief projects. Wage scales, moreover, are lower than formerly.

Life insurance scales have been running at about 80 per cent or better, compared with the 1924-28 average. Life insurance protection for dependents is considered one of the most essential demands on earnings, and these scales fairly reflect spending power.

Foreign trade has recovered to better than 70 per cent. About 1933 it was down to 40 per cent. Trade is still handicapped by tariffs, exchange and other difficulties, but it has been helped by recent modifications.

Railway car loadings have ranged lately from 60 per cent to 80 per cent of normal. That motor traffic has to some degree replaced railways seems a fair criticism, though not so important in respect to freight as to passenger travel. Railway business seems to lag a little behind the general recovery.

Building permits, constituting the sixth set of figures included, are conspicuously low, being less than 40 per cent of normal in even the best of recent months. A wide range of industries and trades are covered by building, and moreover it reflects the saving of money, and its investment in new and permanent form, all of which requires financial ability and confidence in the future. That is still lacking to an obvious degree.

When we analyze other figures showing more striking gains, it is usually found that they are of industries which are still in process of development. The automobile industry, and with it the consumption of gasoline, is an example. Another is electric power, which is in greater consumption now than ever before.

All these unusual gains are contributing to recovery, and help the country. In some cases they are not fully effective in helping general business because of low prices and profit margins. News-print shipments are high, and in spite of improved mechanical equipment they are using more labor, but they have not yet brought dividends to shareholders. So long as commodity prices stay down around 75 per cent of their former level, we will retain some of the difficulties of the depression, however great the volume of business may be. A recent advance in the commodity average is therefore a most encouraging sign.

# Costing Percentage Contracts

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(One of the important subjects constituting part of a course given for the Society of Incorporated Accountants and Auditors, at Cambridge, Eng., in July, was "Costing in Relation to Contracts on a Percentage Basis," by W. H. Stalker, A.S.A.A. This is reproduced below, along with some of the discussion, from the Incorporated Accountants Journal.)

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**I**T has been customary for at least as long a period as we have any knowledge of accounting methods for certain people engaged in trade and industry to be remunerated on the basis of cost plus some arbitrary addition for profit, and large contracts, even in times of normal trade—that is to say, when there was no state of emergency such as exists in a time of war—were remunerated on a basis of cost plus a prescribed addition for profit.

At least one of the principal shipping companies in this country had adopted the practice many years before the war of having certain of its larger ships built on the basis of cost plus profit, such costs, of course, being subject to scrutiny by an independent accountant.

Contracts of this nature were frequently referred to as "Time and Lime Jobs." The origin of this expression is somewhat obscure, but it is believed to have been first used by those engaged in bricklaying. At one time it was customary for a bricklayer to enter into a contract to erect buildings for a customer who supplied the bricks and necessary scaffolding, and also the lime. The contractor provided the labour. Each bricklayer had his own method of mixing the lime and cement, and preferred to use his own particular mixture of binding material, which, from his past experience, he considered to be the most suitable. The term "Time and Lime" thus became a familiar one in this trade, and it was adopted in reference to Government war-time contracts, and later extended generally to ships and engines built for mercantile firms where the shipbuilders or engineer provided the whole of the material in addition to the labour.

Generally it may be said that the conditions which give rise to the payment for work on the basis of ascertained cost are as follows:

(a) When it is recognised by both the contractor and the customer that it is impracticable to gauge the work to be undertaken with sufficient accuracy to permit of an estimate of its cost being

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made so that a fair tender may be submitted. This may arise through the work being so novel in design, or construction, or because of the abnormal size of the contract, or because of the physical difficulties which have to be overcome, of which precise knowledge in advance cannot be obtained; for example, the building of large canals, hydro-electric power schemes, irrigation schemes, new types of battleships, and so on.

(b) During times of economic stress, such as we experienced during the Great War, the elements of cost were subject to much fluctuation, and the contracts were in many cases spread over such a long period that it was impossible to estimate what the cost would be. Consequently, the Government in this country, through its various departments, instituted the method of remunerating contractors on the basis of cost, with the addition of a pre-determined rate of profit. Similar methods were employed in the United States of America, where the practice was designated by the title "Cost plus."

The work included shipbuilding, ship repairing, the supply of marine and other engines, building of all descriptions, and the manufacture of various kinds of armaments and munitions.

Some of the work undertaken was of an experimental nature, and in connection with repair work during the war the extreme urgency, apart from the abnormal conditions, made it impossible to follow the normal course of taking estimates and fixed prices. The Government departments provided in some few cases a certain quantity of the fittings and a portion of the materials, whilst the contractor supplied the labour and the remainder of the materials.

Contracts on a percentage basis have been subject to much criticism on the ground that they were liable to abuse. The contractor has no incentive to practice economy, indeed the reverse is the case, as his total profit will increase with the cost unless a fixed lump sum is agreed for profit in advance.

Government departments, in recognition of this weakness, instituted a method and applied it to many contracts during the war, by which they overcame the main defect of lack of incentive to economy. The method applied was to remunerate the contractor for the actual cost of material and labour, plus an agreed percentage for overhead charges, and a definite lump sum for profit.

Extreme care should, of course, be exercised in preparing the agreement, as in the absence of clear and definite terms, it is inevitable that differences of opinion are likely to arise as to the meaning intended by the word "cost."

Much valuable time may be saved if the office staff take the precaution to file in correct chronological order all invoices, credit notes, requisition slips, and other documents relating to each contract.

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### Necessity for Cost Accounting

The necessity for accurate cost accounting was never so readily and fully recognised by industrial management as it is to-day. In my opinion, the striking developments which have taken place in this branch of accountancy within the past fifteen years are largely the result of the disturbances of the late war, and its aftermath. Indeed, one prominent writer on the subject gives it as his opinion that "Cost accountancy was discovered, so far as the general public was concerned, as a result of the experiences of the war years. The application of costing methods to the manufacture of war munitions as a means of speeding up output is one of the epics of the war. For a great many business men, it provided their first glimpse of costing as a means of controlling production, as an aid to works management, and as an eliminator of waste. Above all, it afforded a valuable object lesson which was not lost upon industry and commerce when operations were resumed after the war was over."

Before payment was made for these war-time contracts, they were mostly, if not all, subject to investigation by accountants, and also in certain instances by trained engineers and other technicians. One department, for example, had a group of highly-skilled engineers who had been specially trained in the Government works. These men were made responsible for checking the material and labour which was debited to the contracts. Every item of material was examined with the view of ascertaining whether it were an essential part of the structure actually worked into the job. Not only were the wages records checked, but control was kept of the actual men employed on each job. Co-operation existed between the technical officers and the investigating accountants, and a complete and satisfactory control was thereby exercised. In certain contractors' works it was found that work of substantially the same kind, but possibly contracted for at different times, was being remunerated on a cost basis, while other work was being done at a fixed price. The opportunities for abuse under these conditions are too obvious to require mention.

The fixing of the appropriate rate for overhead charges presented some difficulty, except in those establishments where the whole of the work performed was for the Government departments. Many contractors commenced Government work in the belief that they would get some preconceived rate of overhead expenses which they may have been accustomed to charge in the past in their estimates and costs, and in certain instances these rates (some of them fantastic) were apparently tentatively agreed to by the departments, but as officialdom gained experience in this type of overhead charges, and even revoked the preconceived rates which had been tentatively applied to the earlier contract.

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### The Rearmament Programme

It is well known to all my listeners that our Government departments have decided upon the expenditure of large sums of money, and in the near future we are likely once again to have experience of the type of contract with which this paper is dealing.

According to the Official Report of the Proceedings of the House of Commons for Thursday, February 20 (col. 1960, vol. 308), Lieut.-Commander Fletcher (Labour, Nuneaton) asked the Prime Minister whether, in view of the recent levels which aircraft and iron and steel shares have reached coincidentally with the Government's examination of rearmament, he will institute some system of costings control, so that the heavy burden which rearmament will lay upon the nation may not afford an opportunity for the making of excessive profits?

The Prime Minister's oral reply was that:

"Provision is already made for the inclusion of a costings clause in the contracts for aircrafts and engines placed in connection with the expansion of the Royal Air Force, and similar appropriate steps will be taken to ensure that excessive profits are not made in the orders that will be placed to make good the deficiencies in the other defence services."

Dealing with the same matter when the House was sitting in Committee on May 21st, 1936, Sir Thomas Inskip said that

"The Government made a promise that there should be nothing in the nature of profiteering, and that is a matter that has engaged the attention of all concerned in the various departments. Profiteering is meant to refer to that additional price which can be extracted because of the increase of demand over supply, and not as a compensation for increased costs, and the plan which the Government have aimed at, and tried to carry out in many of the cases, is to give a contract on the terms that the price will be fixed with reference to a careful costings examination, with an addition of profits not based, I would say, by way of percentage upon output, but profits that will be limited either by agreement, or, in some cases, by arbitration. The Committee will realise that if you are to avoid rising prices as the result of the great demand which is being made upon industry, some such method as this must be adopted."

The statement contained in the White Paper presented to the House of Commons on Tuesday, March 3rd, 1936, that: "Control to prevent excessive profits will be effectively exercised by inspection of books, adequate technical costings, audits on behalf of the State, and arbitration in cases of dispute," may be satisfactory up to a point, but it provided no guarantee. Who is to determine what are "adequate technical costings?"

### Important Factors in Job Costs

My remarks are being addressed chiefly to the young Incorporated Accountant who has within recent years successfully passed through

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the ordeal of his final examination. It is, therefore, not necessary for me to dilate on the various methods of cost accounting, or to explain to you the difference between Single, Batch, Process, Operating, Terminal and Multiple accounts.

The particular type of contract which we are considering is usually associated with Terminal costs, or what are perhaps better known as Job costs.

It is not intended that this paper should attempt to give a complete description of the methods adopted in keeping the cost records of a contract, especially as there is now in circulation such an ample and excellent supply of books on every conceivable aspect of cost accounting. On the contrary, it is my intention to deal with the subject before us in such a way as will, I hope, show the pitfalls to be avoided in preparing a job cost, and more especially, to draw attention to those matters which will call for the careful scrutiny of the investigator.

We will now briefly consider the various elements which are incidental to the execution of such a contract.

The elements of cost are:

- (1) Direct Labour.
- (2) Direct Materials.
- (3) Overhead Expenses.

In the time at our disposal it will only be possible to give a brief outline of the methods to be adopted, and our endeavour, therefore, must be to confine ourselves to main principles rather than to details.

### Labour

Dealing first of all with direct labour, it is now almost the universal practice for all employees engaged on productive work to register their time of arrival and departure, and also to record the particulars of work done and the time spent on each particular job.

The information may be obtained by the use of:

- (a) Daily time sheets or cards.
- (b) Weekly time sheets or cards.
- (c) Job cards filled in by hand.
- (d) Job time recording instruments.
- (e) Piecework sheets.

Great progress has been made in recent years in the invention and improvement of the various cards and instruments used for the recording of labour. The accuracy of the time charged to each job is materially assisted by modern methods of time-keeping. Strict discipline should be rigidly enforced in everything connected with the recording and payment of wages.

Foremen or charge-hands should countersign all time and piecework records, and all overtime should be sanctioned in advance, and properly authorised overtime slips should be made out or signed by



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the foremen. All piecework payments must be vouched by properly authorised piecework sheets. In the case of "Time and Lime" contracts, the purchaser usually engages one or more recorders, whose duty it is to check from time to time the number of men who are actually working on the particular contract; and this is done at irregular intervals, and acts as a surprise check. The men's cards are examined and initialled by them. The accountant who is verifying the total cost of the contract should examine exhaustively the wages summaries and all the supporting documents right back to the original records in respect of several complete weeks. He should make his own selection of the period or periods to be checked, and the time cards and wages abstracts should be examined with great care in order to ascertain whether any labour has been charged for which is not a proper debit to the contract.

If the whole output of a concern is being paid for on a Cost-plus basis, the work of the investigator is somewhat simplified. He can readily ascertain that the sums allocated to each job as per the wages summary, when aggregated, come to precisely the same total as the direct wages paid according to the cash book. This, of course, would not serve to show up any inaccuracy caused by such an error as the cost of a man's labour being charged to the wrong job.

As very few commercial firms follow the same system, it is necessary for the investigating officers to be fully informed as to what labour is a direct charge and what is included in the overheads, e.g., draughtsmen, foremen, etc., particularly when the complete investigation is not carried out by the same officials.

### Materials

The materials used in the construction of a contract might be roughly divided into those goods which are purchased specifically for the job, and the multitude of items which are drawn from the contractors' store.

In investigating the cost of a "Time and Lime" contract, all invoices should be examined in respect of the direct purchases. The contract is usually known by a specific number. This is quoted on all orders and invoices, and the latter should bear the usual rubber stamp indicating that the goods have been received by some responsible stores official, and that the quantity, weight, and price have been checked and agreed with the official order. The supplier, in the majority of cases, quotes the job number on the invoice, but if this has not been done, it should be inserted by the storekeeper or stores clerk, who has certified the accuracy of the entries on the document.

The verification of the cost of direct materials presents little difficulty. Other materials, including such items as bolts, rivets, nuts, washers, iron, steel, timber, paint, electrical fittings, etc., are purchased in bulk, deposited in store, and issued in small quantities.

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During times of emergency, difficulties may arise in regard to obtaining supplies, and prices are apt to fluctuate rapidly.

The purchase and issue of stores should be properly organised and controlled. No materials should be issued from the store except on the production of a requisition order, which must be signed by a foreman or some duly authorised official. This form should show the full details of the weight, quantity, size, or other description of the goods, with the date of issue and number of the job for which required. All surplus materials should be returned without delay to the stores, and the storeman should then issue a material credit note, giving all the necessary particulars, but in this case printed in red to distinguish it from the issue requisition.

As in the checking of the labour, a similar procedure should be followed in verifying the stores debited to a contract. The requisition slips and credit notes for a selected number of weeks should be called for and exhaustively checked to the job cost account.

It would be impossible in a large store to earmark each consignment of goods and to ensure that it is priced out in due course at exactly the same price as was paid for it. Several methods of pricing out are in everyday use. The most frequently adopted include:

(a) The average cost method. This may be worked out on the average of the prices paid or a weighted average based on the quantities purchased at each price. Sometimes the average price of the goods purchased during one month is used as the basis for pricing out all issues for the following month.

(b) The "first-in-first out" method, which assumes that the stores are issued from the earliest lot purchased until exhausted, and then from the next delivery—the actual cost in each case being debited to the cost account. Such a method might work unfairly as between one job and another, when fluctuations have been frequent, but in practice it is generally found to be satisfactory.

(c) The highest cost first method. This is adopted when it is considered good policy to have in stock those materials which have been least costly, and by this means the more highly priced lots are charged out first, although it may be that they were the more recently purchased.

(d) The market value method, by which all materials issued are charged out at the prices ruling on the date of issue, no matter what the actual cost has been.

It will be apparent that whichever method is adopted, the total sterling value of stores issued will not agree with the total cash expended for the goods which have been taken out of store. In addition to this fact, it should be stated that it is a common practice to add about 5 per cent. to cover the cost of handling, etc. This percentage

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is to cover wages of storekeepers, clerks, and other staff engaged in stores, and also rent of store, insurance, depreciation and shrinkage of stock (such as occurs in weighing out in small quantities goods which have been purchased in bulk). Stores accounts will, therefore, have been debited with the commencing stock, goods purchased, returns inward, and storekeepers' wages. It will have been credited with goods issued and returns outward. When the closing stock at the end of a financial year is taken into account, it will usually be found that a small credit balance remains. Any such difference is usually transferred to the credit of the trading account under the heading of "Surplus on Stores."

Before leaving the subject of materials, I should like to mention several important points which ought to be set out clearly in the wording of any contract drawn up on a percentage basis.

(1) Discounts.—Usually the purchaser should have the benefit of all trade discounts, but the contractor is entitled to retain the cash discounts which he obtains by paying for his supplies within the specified time.

(2) Most "Time and Lime" contracts include a clause specifying that the purchaser should be entitled to an allowance for scrap. In the building of a ship, for example, a considerable amount of scrap steel is made by reason of the countless number of holes which are punched in the steel plates prior to rivetting, and also in cutting the plates to the exact size required. This scrap is collected and sold at regular intervals, and in a busy yard it amounts to a considerable cash value in the course of a year. In some instances the contract specially provides that credit should be given for scrap based on a certain percentage of the total invoice weight of steel debited to the cost of the ship. It is usual, however, in most yards (owing to the difficulty of arriving at the actual value of scrap derived from each vessel) to take the value of the scrap sold over a given period, deduct the cost of collecting and loading, and then credit the ships with the balance as a percentage on the invoice weight of the steel used, or, alternatively, *pro rata* to the total of the platers' labour, on each vessel.

(3) All material spoiled should be credited to the job cost at a figure inclusive of cost of material plus labour expended thereon, and overhead expenses. Spoils may be brought about in a variety of ways, such as faulty labour, faulty material, faulty machinery, accidents, or experimental work.

(4) Carriage.—Carriage on all direct purchases is a proper charge to the contract, and the indirect materials passing through the stores will also have their appropriate share of carriage allocated to them.

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(5) Service bolts.—Care should be taken to ascertain that proper credit is given for such items as service bolts, which are charged to the job, but do not form a part of the construction, and are removed when no longer required, being gathered up for use on future work. The full cost of these bolts and any similar fittings should not be debited to the job, but only a charge made for their use.

(6) Sub-Contracts.—The costs of sub-contracts are usually subjected to the same examination as the costs of the main contract.

### Overhead Expenses

After the labour and materials, the next and the most important point of all is that of overhead expenses, which are sometimes referred to as oncost or as indirect charges. They include such charges as cannot be assigned specifically to any individual job or contract, for example, rent, rates, depreciation, insurance, salaries, and general expenses.

In many concerns these are divided into two classes known as "Fixed" and "Variable" Expense. The chief items of expenditure falling under these headings are as follows:

#### Fixed Expenses:

- Management salaries.
- Rent and rates.
- Insurance—fire, boiler, etc.
- Repairs to buildings.
- Stationery and printing.
- Travelling expenses.
- Telegrams, telephone, and postages.
- Upkeep of service bolts, models, and patterns.
- Watchmen and gatemen.
- Proportion of head office charges.
- Depreciation of buildings and plant.
- Loss on loose tools and working plant.

#### Variable Expenses:

These may be divided into several classes:

- (1) Repairs to tools, subdivided as under:
  - Hand and machine tools;
  - Pneumatic tools;
  - Other tools.
- (2) Repairing, attending, and cleaning machinery, subdivided over the different classes of plant.
- (3) All other indirect labour.
- (4) Coal, gas, electricity, water, compressed air, and hydraulic power.
- (5) Consumable stores.

Of all the problems which face the cost accountant, undoubtedly the vital one is the question of the best way in which to allocate overhead expenses. In the old days these expenses were usually

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recovered by means of an all-round percentage on wages, but with the introduction of labour-saving machinery the wage bill for a given output fell considerably, and concurrently with this decrease in wages, there was an increase in overhead expenses. This rise and fall, however, varied in extent, and it became increasingly difficult to arrive at a suitable rate to apply to the different processes and products. Many varied methods are now used in different undertakings of "spreading" these costs in order to ensure that each product or class of product shall be debited with its relative proportion, and after years of experience, the more important industries have been enabled to choose the particular method which is most appropriate to the special circumstances of the trade. The nature of the work carried on, the method of costing adopted, and many other factors all have a direct bearing upon this problem.

When the war-time costs of numerous manufacturing concerns were subjected to keen investigation, it was discovered that there existed a great diversity of method in regard to this important matter.

Amongst the different methods of allocation might be mentioned:

- (1) A percentage on direct wages.
- (2) A percentage on direct materials.
- (3) A rate per hour of direct labour.
- (4) A rate per machine hour.

It may be taken for granted that there is no specific allocation of overheads that can be selected as being suitable for all industries. No matter how carefully and elaborately a system has been thought out, the results must inevitably be approximate.

There is one important matter connected with this portion of the subject to which reference should be made, viz., the inclusion of interest on capital as an item of cost. This question has from time to time given rise to much controversy. Undoubtedly there are some industries in which interest on capital is a proper charge to cost. Especially is this so where there is an appreciable lapse of time between the date of manufacture and the delivery of the manufactured goods, as, for example, in the case of such commodities as wine, soap, etc. Similarly in regard to the timber trade, the excessive cost incurred by the stacking of timber during the process of seasoning is an item which must be carefully taken into consideration.

Broadly speaking, however, interest on capital is a division of profit, and not an item of cost. So far as "Time and Lime" contracts are concerned, we must endorse the attitude which was adopted by the Government departments when they refused to allow this expense. No doubt this decision was arrived at in order that there might be uniformity of treatment, and also to obviate any friction of allowing the contractors to arrange their capital resources in whatever manner they thought best. Further, to have adopted any other method would

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have entailed an investigation into the books of each contractor in order to ascertain the amount of the capital which was being employed. When we remember that in some instances only a section of the works was engaged on the manufacture of armaments, the difficulties arising from such an investigation will be realised.

### Post-War Developments

Experience has always been the best teacher. The lessons gained during the years 1914 to 1918 have left an indelible impression on many matters, and in many places.

Great progress has been made in accountancy, and more especially in cost accountancy, in the years which have intervened since 1919.

The management of many of our large industrial concerns have decided that it is unsatisfactory to wait for half-yearly and yearly trading and profit and loss accounts. They now demand such statements at intervals of a month or less, and although resort must be made to a certain amount of approximation in presenting financial returns at such short intervals, it has been found possible so to organise the accountancy departments as to give figures which reflect the results within a sufficiently close margin of accuracy.

In order to achieve this much-to-be-desired improvement in business methods, no small part has been played by the introduction of mechanical methods of book-keeping. The calculator, the adding machine, and the ledger posting machine have brought about a revolution in office methods, and it is now possible to deal with a vast amount of detail in a short space of time. Various methods of keeping records on punched cards and the use of electrical or mechanical sorting contrivances have also contributed very largely to the success which has attended the effort to produce financial statements very shortly after the close of a fiscal period.

Should the time arrive when once again circumstances call for a return to contracts on a percentage basis, it will be found that the changes to which I have referred have contributed in a material degree to making the task of the investigator much simpler than it was twenty years ago.

Reference has already been made to the great differences which existed in the war years as between the overhead expenses incurred and the methods of their allocation, but since that time much good work has been accomplished, at least in some industries, in establishing uniform systems of costing. Progress in this direction is somewhat slow, and possibly it may be traced to that ingrained British characteristic which is apt to raise objections to any innovation which might tend to restrict individuality or favour uniformity. There is still room for expansion in this respect, and many other schemes are at present under consideration. Needless to say, such progress will tend to facilitate the fixing of satisfactory arrangements in regard

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to the additions to be made for overheads and profit in Cost-plus contracts.

### The Professional Accountant

Finally, in considering the large sums of money to be spent on rearmament, we are entitled to ask what is to be the position of the professional accountant in reference to the important points that will arise. Are his services to be utilised in any way in safeguarding the interests of the taxpayers upon whom the burden will fall?

In carrying out his ordinary duties, the auditor to a firm or a limited company does not conduct an examination of the costing system in operation in the particular organisation concerned, unless his instructions specifically include this work, and his remuneration is agreed at such a figure as will reimburse him for the labour involved.

Will the co-operation of any of the trade organisations be sought, and will any advisory committee be established? If so, we cannot too strongly emphasise the need for the inclusion on such committees of a number of qualified accountants who possess the required knowledge and experience of cost accounting to deal with every problem which is likely to arise in connection with contracts fixed on a percentage basis.

### Contracts for Munitions

The following conclusions of an Inter-departmental Conference which was organised at Washington in 1917 to consider and make recommendations concerning Uniform Contracts and Cost Accounting Definitions may be of interest:—

It was recommended that "in every instance where fair terms can be obtained, contracts should be in the form of straight purchase-and-sale contracts at fixed prices." Secondly, "In the determination of fair terms for fixed price contracts, the contractor, in so far as possible, should be required to state the cost and other factors upon which his price is based; such representation to be the subject of investigation by the contracting officer prior to the final execution of the contract, and if found to be incorrect, the price to be adjusted accordingly."

In addition to the above proposals, a further form of contract has been suggested, "which would eliminate the objectionable features of the cost-plus agreement, and at the same time enable the Government to procure its munitions quickly and without loss to the contractor. This has been designated the adjusted compensation contract, and its purpose is threefold:

"First, to insure the contractor against loss; second, to provide an incentive to produce the munitions in the shortest possible time; and third, to provide an incentive for their production at the lowest possible cost.

"With respect to the first of these, the contractor will be paid concurrently for all expenditures incident to the performance of the



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work. These include the salaries of the officers and employees, or that portion of them which is applicable under the contract; the wages of the workmen; the cost of all material required; the plant overhead; the depreciation on plant and facilities used; the cost of preparing the plant for performing the work; the cost of any machinery or tools which may be required for the performance of the work; and, when the contract is completed, or if it is terminated before completion, the cost of rehabilitating the plant or restoring it to its original condition. In addition to being paid his costs, he will be paid a predetermined fee. Thus the contractor is insured against loss. This saves the contractor the trouble incident to borrowing large sums of money from banks and paying high rates of interest. It enables the contractor, if the work is terminated, to receive the payment of any balance due without the necessity of filing a claim.

"The second point is to provide an incentive to the contractor to produce the munitions quickly. To supply troops that may be called to the colours with munitions promptly is of paramount importance. The availability of munitions on the firing line soon after declaration of war may mean the saving of thousands of lives, and shorten the war, with a huge financial saving to the nation. As an incentive to produce munitions expeditiously, the contract provides for the payment of a predetermined fee upon completion of work. If, for example, the estimated time for completion of the work is one year, a fee based on the value of the contractor's plant and capital used in the period is determined and made a part of the contract. If the contractor performs the work in less than one year, the full fee is paid. The contractor, therefore, has an incentive to complete the work in the least possible time. If, on the other hand, it takes longer than a year to complete the work, no additional fee is allowed.

"The third point is to provide for the production of munitions at the lowest possible price. It is apparent that if the Government, without any limitation, paid all of the contractor's costs, there would be nothing to prevent a contractor from paying abnormally high prices for materials, or from attracting workmen from competing plants by lure of higher wages. This was the principal objection to the cost-plus contracts used during the World War. In the adjusted compensation contract, the salaries of the officers, the rates of wages to be paid for the various classes of labour, and the unit prices of the material to be used on the work are set forth, and these prices may not be exceeded unless a federal agency appointed for the purpose of regulating the prices of labour and material alters it. In the absence of such agency, the chief of branch may authorise necessary changes. The contract provides that if the contractor produces the articles or work called for at less than the estimated cost, he will be given a share in the savings. This offers an incentive to the con-



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tractor to keep costs down to a minimum and to devise ways, based on ability and experience, of performing the work more economically."

The Conference also decided that "in numerous instances it would be necessary to obtain production by paying for the entire cost of the same, and in addition a fair profit to the contractor. Such cost-plus contracts may be necessary under the following conditions:

"(1) Where the production is novel and the contractor has had no past experience upon which to base a price; for example, steel helmets, large calibre guns, and shells for same, aeroplane motors, and the like.

"(2) Where the production involves difficult and complicated manufacturing effort subject to changing plans and specifications, or wide fluctuations in material costs; for example, steel and wooden ships, aeroplanes, optical glass, and the like.

"(3) Where the contractor, though deserving of confidence, lacks sufficient working capital and plant equipment to carry through the job.

"(4) Engineering or building jobs for which the cost-plus contract has for many years been standard."

### Co-ordination and Co-operation

It is true that the accountant cannot work entirely alone in these matters; he must consult engineers and other experts on the many technical aspects, and managers in regard to the works organisation. His recommendations and decisions must be framed after careful consideration of their views, and must correspond with the works organisations and technical details. It must never be forgotten that at every step the human element is a very important factor. The most perfect machinery needs competent supervision, and the efficiency and economy with which a contract is fulfilled depend very largely on the men to whom the direction and execution of the work are entrusted. The accountant himself must seek the co-operation of people of diverse experience and outlook, and must be willing to adjust himself accordingly. He must use tact and patience, while maintaining always the high standard of probity and skill which have won for our profession its present position in the public confidence.

### Discussion

Group A.—It was suggested that when examining costs it was helpful for an accountant to have comparisons of separate factories producing similar products, but it was pointed out that such comparisons were generally of little value owing to differences in the plant and the lay-out of the factories, etc. Difficulty was seldom experienced in obtaining accurate information regarding direct labour, but the same could not be said with regard to indirect labour. Regarding interest on capital, the view was favoured that such interest should be charged in the costs.

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**Group B.**—The difficulty of fixing prices on output where works were not working to capacity was discussed. Idle time expense had to be borne in mind in levying overhead charges. A suggested method for overcoming this difficulty was to budget for oncost by reference to standard productive capacity. At the end of a test period an "Under-absorbed Burden A/c." or an "Over-absorbed Burden A/c." could be raised, as the case might be. The total of this account could then be re-distributed over the following period. It was considered that a good method of price-fixing would be to supply an estimated cost price and a corresponding selling price. If the estimated cost proved to be lower, or the work was carried out in less than the stipulated time, the contractor should be given a premium bonus percentage. A discussion arose as to whether the cost of goods damaged in manufacture should be charged as oncost. Whether compensation should be paid to the contractors for such damage appeared to be a matter of circumstances. It would be unfair to give compensation for damage due to inefficient workmanship, and it would be equally unfair not to give compensation for damage caused by some inherent flaw in raw material, which flaw could not be ascertained by the manufacturer before the process of manufacture commenced. It was considered that interest on capital locked up in goods between the date of the manufacture and the date of delivery should form a valid charge against the price of goods. Immediately the goods were delivered their value became represented by book debts, the collection of which became a financial matter. Interest on capital locked up in these book debts did not form part of the cost price of the goods and should not be included as an element of oncost. The recommendation in the paper against taking interest on capital into consideration was thought to refer to the specialised accounts dealt with rather than to cost accounts generally.

**Group C.**—This group was fortunate to include a member who had had considerable experience of costing from the point of view of the Government Department checking the figures. Where instalments were paid on account of a contract the Solicitor-General had decided that cash discounts should be brought into account in arriving at cost. The difficulty of identifying payments charged as direct charges, but properly attributable to establishment charges, was mentioned. An inefficient factory under the old system of costs would receive a higher percentage, which penalised efficiency. The dangers of overloading the wages sheet was mentioned, and it was agreed that the Government checker should inspect work in progress at unexpected times. It was agreed that, on the whole, the percentage basis was bad, and a suggested solution seemed to be for the Government to take over whole concerns and pay a dividend to cover rent, wear and tear, and a reasonable profit.

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**Group D.**—The "Cost plus Profit" method of contracting while possessing certain inherent disadvantages, was considered satisfactory provided the usual safeguards were adopted. Accountants with experience of this method in connection with various Government departments took the view that the alternative methods suggested from time to time would prove less efficient. In the case of contracts of a special nature where tenders were impracticable the "Cost plus Profit" method was regarded as essential. The system depended almost entirely on efficient costing records from the point of view of both the manufacturer and the customer, the main safeguard to the latter being the right to inspect the costings.

**Group E.**—It was agreed that there was too much confusion between estimating and costing. Costing was looking backwards, whereas estimating was looking forwards. It was agreed that the system of "cost plus" should only be used in exceptional cases. Where selling prices were fixed (and in many cases market price decided these), the "hit-and-miss" system had to be used. The question of the inclusion of profit in the valuation of "Work in Progress" was considered, and it was agreed that some profit should be included, but the system should be standardised. It was also agreed that cost must be cost per unit, e.g., cost per passenger mile, and not cost generally for comparative purposes.

**Group G.**—The need for price-fixing on a cost plus percentage basis, while being fully appreciated, was depreciated unless the special circumstances justified its use. The ordinary methods of estimate and a fixed price contract should be used wherever possible. In a time of great fluctuation in price of materials and labour it was suggested that the contract could provide for the necessary adjustments arising from these causes. The evils prevalent in the war-time contracts placed under this system, particularly the lack of incentive to the contractor to maintain a low cost, were mentioned. Means of overcoming these evils were discussed, and it was suggested: (1) That purchasers must have means and should avail themselves of the opportunity of inspecting the contractors' costing records; (2) that there should be close co-operation between technical staff and the costing inspector in order to verify the materials and labour charged to the contract; (3) that contracts based on cost plus profit should have the profit fixed on a sliding scale giving a greater percentage of profit on saving in cost over an estimated figure to be agreed between the parties; (4) that in the case of Government contracts the Government should purchase in large quantities for the benefit of all contractors, thus effecting savings in cost and placing all contractors on a similar basis as to cost of raw material; (5) that as no risk of loss was taken by contractor a lower percentage of profit should suffice; (6) that oncost should generally be added as a percentage on wages and

## COST AND MANAGEMENT

not on materials or total cost, owing to the greater fluctuation in the price of the materials. It was agreed that, as a general rule, "Spoils" should not form part of the cost of a specific contract, but should be recovered as oncost spread over all contracts; although special consideration and treatment might be necessary in the case of experimental work or training of labour for specific contracts. Wherever possible oncost should be added by means of a machine or man-hour rate as being the most scientific method. Adding oncost by means of a general percentage should be avoided if at all possible. Profits to the contractor should be fixed on a sliding scale wherever possible as an inducement to him to reduce costs.

**Group H.**—The question of compensation for loss in respect of plant rendered idle in connection with the manufacture of munitions for the Government was considered; also whether interest on capital should be included in "overhead" expenses or provided for in the percentage added on to "Cost" to cover "Profit."

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Collins, J. L., C.A., Mutual Life Assurance Co. of Canada, Waterloo.  
Cowan, W. S., Guelph Carpet & Worsted Spinning Mills Ltd., Guelph.

Earnshaw, G., Guelph Carpet & Worsted Spinning Mills, Ltd., Guelph.

Good, G. R., Kaufman Rubber Co., Ltd., Kitchener.

## MEMBERSHIP LIST

Henderson, J., Newlands & Co., Ltd., Galt.  
Ireland, H. S., Canadian General Rubber Co., Ltd., Galt.  
Jardine, W. L., Clare Bros. & Co., Ltd., Preston.  
Kidd, J. J., C.A., Thorne, Mulholland, Howson & McPherson, Galt.  
Odendahl, R. T. F., La France Textiles, Ltd., Woodstock.  
Osborne, J. E., Canada Ingot Iron Co., Ltd., Guelph.  
Tailby, E., C.P.A., Medical Arts Bldg., Kitchener.  
Weber, I. K., Kaufman Rubber Co., Ltd., Kitchener.

## WINNIPEG CHAPTER

Elliott, G. H., Carter-Halls-Aldinger Co., Ltd., Winnipeg.  
Hodson, D. C., Dominion Bridge Co., Ltd., Winnipeg.  
Mitchell, E. D., Great West Saddlery Co., Ltd., Winnipeg.  
Mundell, W. J., C.A., Ogilvie Flour Mills Co., Ltd., Winnipeg.  
McVey, W. W., C.A., Millar, McDonald & Co., Winnipeg.  
Parton, J., C.A., Geo. A. Touche & Co., Winnipeg.  
Portigal, S. A., Geo. Loos & Co., Winnipeg.  
Sheppard, G. H., International Business Machines Co., Ltd., Winnipeg.  
Sutherland, J. B., C.A., Geo. A. Touche & Co., Winnipeg.  
Warnock, E. A., North Star Oil, Ltd., Winnipeg.

## NON-RESIDENT

Burdett, R. A., North Dene, Beckenham, Kent, England.  
Burdett-Jones, A., Dennison Mfg. Co. of Canada, Ltd., Drummondville,  
Que.  
Chang, H. W., National Government Central Mint, Shanghai, China.  
Daly, G. W., Canadian Locomotive Co., Ltd., Kingston, Ont.  
Douglas, J. C., Frost & Wood Co., Ltd., Smith's Falls, Ont.  
Egerton, R. P., C.A., E. B. Eddy Co., Ltd., Hull, Que.  
French, A. R., Enamel & Heating Products, Ltd., Sackville, N. B.  
Hemming, H. K. S., C.P.A., C.G.A., Charlottetown, P.E.I.  
Howard, H. E., C.A., Grain Exchange Bldg., Calgary, Alta.  
Johnson, C.A., Canada Foundries & Forgings Ltd., Brockville, Ont.  
Larson, F. T., Beattie Gold Mines, Ltd., Duparquet, Que.

## COST AND MANAGEMENT

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Meldrum, A. R., Shawinigan Chemicals, Ltd., Shawinigan Falls, Que.  
McCrum, R., 6751a Crest Ave., University City, Mo., U.S.A.  
McLean, F. S., Miner Rubber Co., Ltd., Granby, Que.  
McMackin, H. L., C.A., Hudson, McMackin & Co., St. John, N. B.

Peterson, E. E., Union Milk Co., Ltd., Calgary, Alta.

Query, R., Le Droit, Ottawa, Ont. . .

Roberts, F., Wabasso Cotton Co., Ltd., Three Rivers, Que.  
Rutherford, R.G.M., C.A., R. G. Rutherford & Co., Kelowna, B.C.

Towner, J. A., C.A., Quebec Municipal Commission, Quebec.  
Tremblay, C., Ayers, Ltd., Lachute Mills, Que.

Wilson, F. G., 190 King East, St. John, N.B.

## STUDENT

Belle Isle, J. C., Regent Knitting Mills Ltd., Montreal.  
Bernier, C. W., Pierce Collins Travel Co., Montreal.  
Bone, H. M., Toilet Laundries, Ltd., Montreal.  
Brossard, J., National Breweries, Ltd., Montreal.

Campbell, C. C., 4951 Decarie Blvd., Montreal.  
Castonguay, R., L. G. Beaubien & Co., Montreal.  
Cope, W. J., Wm. Dow & Co., Montreal.

de Bruin, T. G., Canadian Pacific Telegraph, Montreal.

Everett, H. B., Rosedale, B. C.

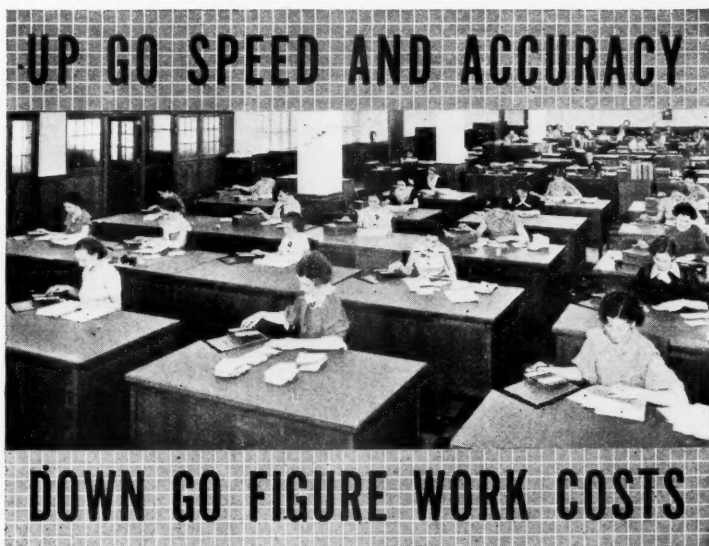
Naylor, F. W., Canadian Tube & Steel Products, Ltd., Montreal.

Oxley, N., Nichols Chemical Co., Ltd., Montreal.

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# Stock Markets Look Favorably on Future

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By W. A. McKAGUE

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**T**HIS year the stock market has taken away from the industrial world, the lead in recovery. A year of advancing prices, from March, 1935 to February, 1936, put stock market averages at their highest point since 1930. The next three months were reactionary, but June was steady, and by the end of July stocks had recovered the ground lost in the spring.

An index of common stock or share prices, calculated as a percentage of 1926, and charted herewith, was over 120 at the end of July. That is, prices averaged 20 per cent more than in 1926. The depression low, reached in the middle of 1932, was 44. The 1929 peak was 218. Thus while stock prices on the average have nearly trebled since their lowest point of 1932, they can gain another 60 per cent before equalling their boom level.

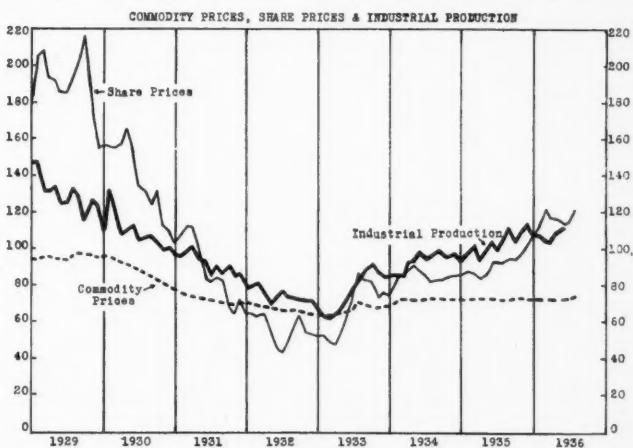
The stock market is not an isolated fact of business. Its level depends upon what is actually accomplished in the industrial world in the way of earnings, and also on what industry is expected to accomplish in the near future. Often this latter function of forecasting the business trend is uncannily accurate. To hear theories about business cycles being governed by spots on the sun, but we have facts about the relation between the stock market and business. This latest move of the stock markets, accordingly, is a definitely favorable sign. It means a probability of further business improvement in the near future.

Business activity in Canada is fairly well measured by the index of industrial production which is also charted, and which is also a

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percentage of 1926. After a high of over 140, about the beginning of 1929, it receded until, in early 1933, it was barely over 60. In other words, the average quantity production of industry, as closely as it could be measured by assembling figures of many branches, was just over 60 per cent of the 1926 level, and less than half the 1929 peak. As in the stock market, there was a sharp upturn in early 1933. Since then, with minor recessions, the business index has recovered to over 100. The latest available figure is approximately 111.

It will be noted that stock market variations are much wider than are those of business. This is logical, considering the speculative nature of the former. But it is also true that the stock market is specially sensitive to current events, such as threats of war, and crop conditions. It reflects the views of many thousands of traders, brokers and business experts, who draw their information



from all parts of the world. Business indexes, on the other hand, have to wait for weekly and monthly figures of production, and these in turn wait on the decisions of business executives.

The commodity price level, which thus far has been the laggard in the recovery trend, showing a net gain of just about 10 per cent over its depression low, has been favorably affected in recent weeks by the drought which cut down crop estimates in large areas on this continent. Prices of farm products rose on the average by about five per cent in July. This was important enough to raise the general commodity average by about two per cent. Several other forces, such as shorter hours and wage increases, are working in the same direction. Nevertheless, compared to any other time since the Great War, commodity prices remain low. Producers are struggling to make

## COST AND MANAGEMENT

money out of a rising volume, but that is never entirely successful. It is only when goods become scarce enough to send prices up, that the maximum prosperity is attained. The threatened food shortage is one powerful factor now at work. While the position taken by the stock market is a broadly optimistic influence.

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### PRICE FIXING IN THE UNITED STATES

"Minimum Prices Under the NRA" is the title of a study published by the University of Michigan, the author being Herbert F. Taggart, Associate Professor of Accounting.

Even though the NRA experiment, as such, may have faded into the realm of history with the Supreme Court's decision in the *Schechter* case, a study of its adventures in price control is no mere rendezvous with the past. Government and trade association activities in this field have not ended; they may have just begun, and thus the results of the "great experiment" as depicted by Professor Taggart assume great importance for those charged with responsibility for or otherwise interested in the economics and practice of price control in our economic order.

In this monograph is set down a detailed account of the several schemes for the establishment of minimum prices and of the NRA codes which adopted them. Attention is also given to the legal precedents in this country for the establishment of minimum prices and to the cases concerning minimum prices which have reached the federal courts during and since the NRA regime. To this extent the study deals only with historical facts.

Broadly speaking, the attempts at setting minimum prices failed. They not only disregarded fundamental economic doctrines, but they were so subversive of the entire philosophy of anti-monopoly legislation that it was impossible to secure their legal enforcement. They lacked the unanimous support of the members of industry whom they were supposed to help and, as might have been anticipated, failed to obtain the favor of consumers. The latter part of this study is given over to a particular setting forth of facts and opinions regarding the causes of failure and to suggestions as to what might have been done (and what may yet be done) to obtain the desirable objectives of minimum prices while suffering none of their drawbacks.

While on leave from his position at the University of Michigan, the author of this book was connected with the National Recovery Administration for eleven months as Chief of the Cost Accounting Unit, Division of Research and Planning. In this capacity he had the opportunity to observe the workings of the various attempts to establish minimum prices, and his training as an accountant and economist enabled him to present this critical analysis of code provisions relating to price controls.



